

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants : Donald K. Jones Confirmation No.: 8210  
Appln. No. : 10/738,477 Art Unit : 3767  
Filed : December 17, 2003 Examiner : Osinski, Bradley James  
Title : Activatable Bioactive Implantable Medical Device And Method Of Use

<b><i>CERTIFICATE OF TRANSMISSION</i></b>			
I hereby certify that this correspondence is being electronically filed via EFS-Web to the Commissioner for Patents with the U.S. Patent and Trademark Office on: 12 March 2010			
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Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**COMMENTS FOR PRE-APPEAL BRIEF REVIEW**

Dear Sir:

These comments are being filed concurrently with a Notice of Appeal and a Pre-Appeal Brief Request for Review.

Claims 17 and 18 are pending and claims 1-16 have been withdrawn. Claims 17 and 18 are rejected in the Final Office Action dated January 12, 2010.

***Claim Rejections Pursuant to 35 U.S.C. §103***

(1) Wallace in view of Pinchuk

Claims 17-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wallace et al (US 2002/0143348) in view of Pinchuk et al (US 2002/0107330).

Applicants respectfully submit that the cited references fail to teach or suggest the present invention, as recited in the claims. For example claims 17 and 18 include the following limitations, among others:

*a barrier exhibiting the characteristic of normally preventing a reaction between the bioactive agent and a bodily fluid and of*

*exposing a portion of said bioactive agent when an external agent is applied to said barrier;*

\* \* \*

*applying said external agent through the catheter and into the blood vessel to thereby dissolve said barrier to expose said bioactive agent to bodily tissue* to thereby cause a reaction between the bioactive agent and the bodily tissue;

(Application, claim 17. Emphasis added)

*a barrier which exhibits the characteristic of normally inhibiting a reaction between said bioactive surface of said medical device and bodily tissue;*

\* \* \*

*applying said external agent through the catheter to a selected site to thereby dissolve said barrier and thus expose said bioactive surface to bodily tissue* to thereby cause a reaction between the bioactive agent and the bodily tissue;

(Application, claim 18. Emphasis added.)

For example, the Wallace reference describes "embolic assemblies that can be reinforced *in situ*." (Abstract. Emphasis added.) The Wallace reference describes occlusive compositions.

In one aspect, the invention includes a vaso-occlusive assembly, comprising (a) an implantable device having an axial lumen and (b) a liquid agent, wherein the liquid agent is infused into the lumen of the implantable device, and further wherein the liquid agent (i) self-polymerizes into a rigid or semi-rigid state after infusion (e.g., over a period of minutes to hours) or (ii) polymerizes upon interaction with one or more additional agents disposed in the lumen of the implantable device.

(Wallace, paragraph 13. Emphasis added.)

This aspect of the Wallace reference is opposite to the present invention, in that the "liquid agent" polymerizes or self-polymerizes "into a rigid or semi-rigid state". In another aspect, the invention includes a vaso-occlusive assembly, comprising (a) an implantable device comprising a polymeric material and (b) a liquid agent capable of at least partially solvating the polymeric material of the implantable device.

(Wallace, paragraph 15. Emphasis added.)

In embodiments in which the liquid agent comprises a solvating agent, the methods can serve to fuse the implantable

device to itself or to one or more additional devices upon re-solidification of the solvated polymeric material.  
(Wallace, paragraph 18. Emphasis added.)

The Wallace reference does mention "partially solvating polymeric materials of the implantable device," but describes that they will later "re-solidify":

The liquid agent is capable of *transforming into a solid form* for example, slowly over time or by reaction with an agent already present in the luminal portion of the device. In addition, assemblies and methods are described comprising an implantable device and a liquid agent, wherein the liquid agent is capable of solvating polymeric material of the device. *By partially solvating polymeric materials of the implantable device, when these polymeric materials re-solidify* the implantable devices can be bonded to themselves and/or to other implantable devices.

(Wallace, paragraph 23. Emphasis added.)

...the implantable device comprises a polymeric material capable of controllable being *at least partially solvated (or plasticized) and, subsequently, re-solidifying*. In these embodiments, the liquid agent comprises a substance that acts to at least partially solvate (or dissolve) the implantable device such that the device can then be bonded to itself (e.g., the individual winds of a coil) or bonded to another implantable device which has been similarly solvated.

(Wallace, paragraph 40. Emphasis added.)

The Examiner concedes that "Wallace does not, however specifically teach a bioactive agent disposed between the support member and the barrier nor does he teach the polymer is specifically a barrier." Applicants agree completely.

Regarding the Pinchuk et al. reference, the Examiner states that it "does teach a barrier layer of polymers", and quotes Pinchuk:

In some instances, it may be desirable to temporarily enclose the therapeutic-agent-loaded copolymer to prevent release before the medical device reaches its ultimate placement site.

(Pinchuk, paragraph 183.)

It also may be useful to coat the copolymer of the present invention (which may or may not contain a therapeutic agent) with a layer with an additional polymer layer (which may or may not contain a therapeutic agent). This layer may serve,

for example, as a boundary layer to retard diffusion of the therapeutic agent and prevent a burst phenomenon whereby much of the agent is released immediately upon exposure of the device or device portion to the implant site.

(Pinchuk, paragraph 204.)

One of the differences is that the barrier of the present invention does not release the bioactive agent until the external agent is applied. In other words, the prior art includes embolic devices having an outer coating which automatically dissolves when in contact with blood flow, without waiting for a specific external agent. As described in the "Description of the Prior Art" from the present application:

In addition, U.S. patent No. 5980,550, entitled, "Water-Soluble Coating For Bioactive Vasoocclusive Devices," discloses an embolic coil having an inner coating which serves as a thrombogenic agent and an *outer coating of a water soluble agent which dissolves after placement of the coil in order expose the thrombogenic inner coating* to enhance the growth of thrombus into an around the coil.

*The water soluble collating prevents the thrombogenic inner coating from coming into contact with the surrounding blood until the water soluble coating is dissolved by contact with blood which is comprised largely of water.*

While the vasculature occlusive device disclosed in this patent includes an agent for enhancing thrombogenicity of the device and also includes an outer coating to prevent such activity until the outer coating is dissolved by blood flow, *there is no control over when the dissolving process begins and therefore no control over the time in which the thrombogenic agent becomes activated.* Without such control, it is possible that thrombus can begin forming on the coil prior to the time the coil is properly placed within a vessel, or aneurysm, therefore making it very difficult if not impossible to reposition, or remove the improperly placed coil.

(Application, page 3, line 14 to page 4, line 6. Emphasis added.)

Accordingly, the present application describes the outer barrier of the present invention as requiring an "external agent" to be applied, before exposing the bioactive agent. In other words, the present invention is more stable (requiring the addition of some

external agent), rather than activating immediately upon insertion into the body (which might be earlier than optimal).

In addition, Applicants respectfully point out that the principle reference to Wallace does not teach or suggest a bioactive agent disposed on an embolic support member. Thus, it follows that Wallace does not teach or suggest a barrier to prevent a reaction between the bioactive agent and a bodily fluid. This is simply because there is no bioactive agent to protect. Wallace is disclosing a liquid that turns into a solid. See Paragraph #23. Applicants respectfully request the Examiner to identify the embolic support member in Wallace that is to have a bioactive agent disposed thereon and then have a barrier applied to prevent a reaction between the bioactive agent and a bodily fluid? Is it the liquid? Or is it the solid formed from the liquid, which is implanted?

Pinchuk discloses a stent or a catheter that comprises a therapeutic-agent-loaded copolymer that can be covered by a sheath during insertion into the body to prevent premature therapeutic agent release. See Paragraph #183. Pinchuk includes no teaching or suggestion of a bioactive agent and a barrier that is to be dissolved. Thus, for this additional reason, the combination of Wallace and Pinchuk fails to render the present invention obvious.

### **Conclusion**

Applicants submit that the application is presently in condition for allowance and request favorable reconsideration and early notice of allowance. If it would speed prosecution, the Examiner is encouraged to contact the undersigned attorney by telephone.

Please charge any deficiency or credit any overpayment to Deposit Account No. 10-0750.

Respectfully submitted,

By: /Eugene L. Szczecina, Jr./  
Eugene L. Szczecina, Jr.  
Reg. No. 35029

Johnson & Johnson  
One Johnson & Johnson Plaza  
New Brunswick, NJ 08933-7003  
(732) 524-1479  
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